



# INSPIRE

## Infrastructure for Spatial Information in Europe

### MIWP Action 2017.2 outputs

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<b>Type</b>	Document for information
<b>Creator</b>	EC and EEA INSPIRE Team
<b>Date/status/version</b>	03/06/2019 / DRAFT / version 1.0
<b>Addressee</b>	MIG
<b>Identifier</b>	<b>MIG/10/2019/DOC8</b>
<b>Description</b>	Status report from the 2017.2 MIWP action on “Alternative encodings for INSPIRE data”

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<b>actions:</b>	MIG to: <ul style="list-style-type: none"><li>• Endorse the results of the action</li><li>• Promote the results to INSPIRE stakeholders on the national level</li></ul>
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## 1 Introduction

The overall objective of the action is to define alternative encoding rules (mainly for the purpose of viewing/analysis in mainstream GIS systems) for existing INSPIRE application schemas. Proposals for alternative encoding rules were collected through an open call on the MIG collaboration platform and prioritised by Member State representatives through a survey. The results of the survey clearly showed support for GeoJSON as a possible alternative encoding. In addition, also simplified GML, database formats (geopackage, PostGIS, ESRI Geodatabase) and linked data had significant support. Further proposals included also GeoSciML as an alternative encoding for GE and MR.

The first encoding that the 2017.2 expert group specified, in accordance with the demand of INSPIRE stakeholders is the GeoJSON encoding. GeoJSON<sup>1</sup> may serve as an alternative or additional encoding for simple data sets. The expert group, supported by a contractor proposed encoding rules for the 'Addresses' and the 'Environmental Monitoring Facilities' data themes. The outcomes of the work are made available on GitHub<sup>2</sup>. In addition, model transformation rules are proposed with the overall objective to reduce the complexity of encoded INSPIRE data.

### 1.1 INSPIRE UML-to-GeoJSON encoding rule

A document (versioned 0.1 as of 29/03/2019) describing the proposed encoding rule, is made available<sup>3</sup>. It provides an overview of the scope and rules for encoding INSPIRE data in accordance with the GeoJSON standard.

Both schema and instance encoding rules are covered, however it must be noted that, at this point, the JSON schema<sup>4</sup> is still in draft, and is not used in any of the targeted GIS tools. It is therefore not used normatively.

In the encoding rule, a two-step approach is adopted, where model transformations are applied on the level of the conceptual model. This model can then be encoded in simple GeoJSON using the provided general schema and instance conversion rules. In addition, it must be highlighted that the UML-to-GeoJSON encoding rule document does not contain specific rules for each INSPIRE data theme. Theme-specific rules are maintained in separate documents (currently available for 'Addresses' and 'Environmental Monitoring Facilities') to facilitate loosely coupled development cycles and groups.

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<sup>1</sup> GeoJSON standard specifications: <https://tools.ietf.org/html/rfc7946>

<sup>2</sup> 2017.2 GitHub repository: <https://github.com/INSPIRE-MIF/2017.2>

<sup>3</sup> <https://github.com/INSPIRE-MIF/2017.2/blob/master/GeoJSON/geojson-encoding-rule.md>

<sup>4</sup> <https://json-schema.org/>

## 1.2 Model-transformation rules

Multiple model transformation methods are described and available on GitHub. These methods reduce the complexity of encoded INSPIRE data, e.g. by reducing the levels of aggregation, indirect referencing, using simple geometries and flattening structures such as arrays. As with alternate encodings, they have different objectives and scopes. A rule may be used with any number of encodings, including the default encoding, if applicable.

An encoding may refer to any number of such model transformation rules in its conformance classes. For this purpose, each model transformation rule is given a unique identifier (MT001, MT002, etc.).

## 1.3 Theme-specific encoding

Currently, as already outlined, specific encoding rules are made available for the 'Addresses', and 'Environmental Monitoring Facilities' data themes. Examples of GeoJSON instances that follow the encoding rules are also provided on GitHub. Figure 1 and Figure 2 (below) represent GeoJSON instances that follow the newly developed encoding rule. The data can be consumed by a broad range of client applications. Further testing of the support by clients will be done and documented within the context of MIG action 2017.3.<sup>5</sup>

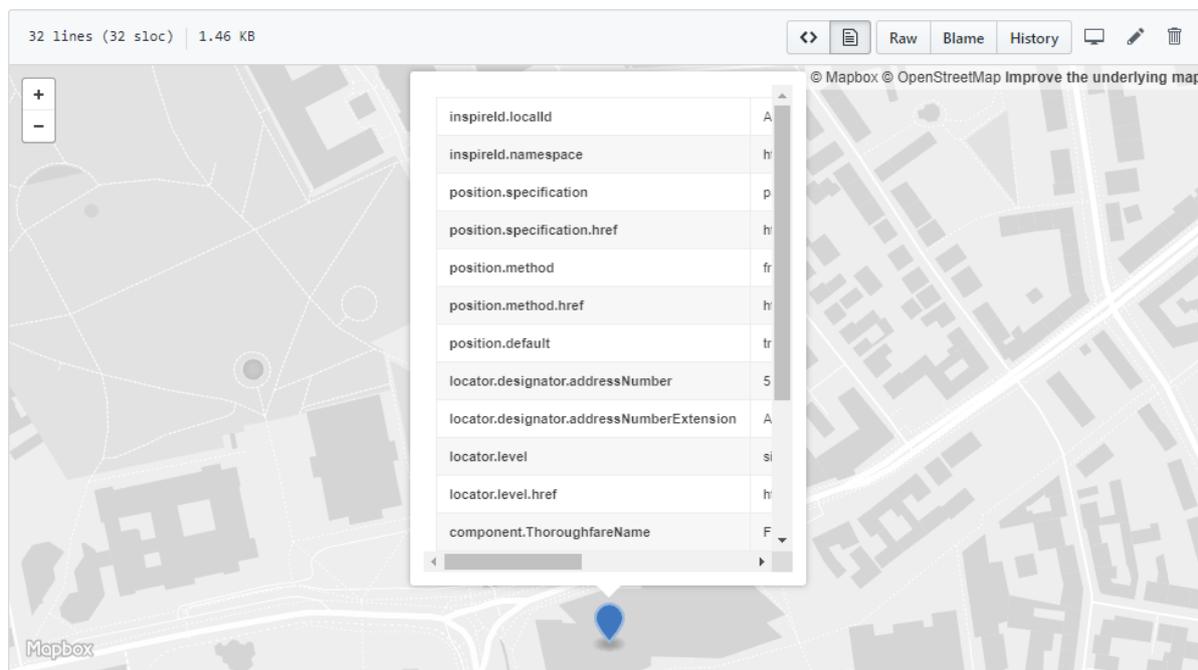


Figure 1. A GeoJSON instance of an 'Address' object visualized on GitHub

<sup>5</sup> Repository for testing of client support, established for MIG Action 2017.3. <https://github.com/INSPIRE-MIF/caniuse>

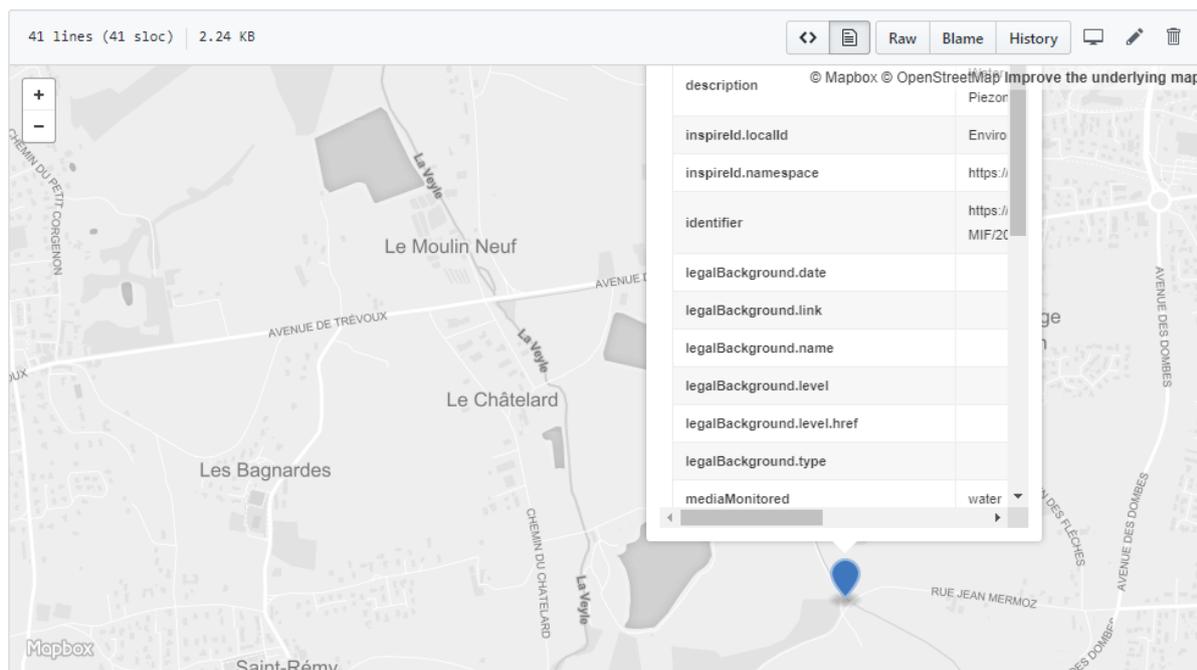


Figure 2. A simple 'Environmental Monitoring Facility' object visualised on GitHub

## 1.4 Glossary

A list of terms and definitions that are used within the context of the action is compiled in a glossary document<sup>6</sup> in order to avoid ambiguity and misinterpretation of the technical content.

## 2 Way forward

A webinar on 'Alternative encodings for INSPIRE data' was held on 7 May 2019. It attracted 114 participants from more than 20 countries. The presentation and recording are available on the webinar event page<sup>7</sup>. This public webinar presented the outcomes of the action which are proposed for endorsement by the MIG. INSPIRE stakeholders are invited to provide feedback on the proposed encodings and implementation examples on Github<sup>8</sup>. The input will be used to improve the specifications.

Members of the MIG are also encouraged to share and promote the results among stakeholders on the national level. Following an uptake by Member State data providers, a proposal will be submitted for endorsement of the proposed alternative encodings as INSPIRE good practice documents<sup>9</sup> by the MIG.

<sup>6</sup> <https://github.com/INSPIRE-MIF/2017.2/blob/master/glossary.md>

<sup>7</sup> <https://inspire.ec.europa.eu/events/webinar-inspire-good-practices-%E2%80%93-alternative-encodings>

<sup>8</sup> <https://github.com/INSPIRE-MIF/2017.2/issues/new/choose>

<sup>9</sup> <https://inspire.ec.europa.eu/portfolio/good-practice-library>